

**UNITED STATES DISTRICT COURT  
DISTRICT OF NEW JERSEY  
TRENTON VILLAGE**

ASSOCIATION OF NEW JERSEY RIFLE &  
PISTOL CLUBS, INC., BLAKE ELLMAN, and  
ALEXANDER DEMBOWSKI

Plaintiffs,

v.

GURBIR GREWAL, in his official capacity as  
Attorney General of New Jersey, PATRICK J.  
CALLAHAN, in his official capacity  
as Superintendent of the New Jersey Division of  
State Police, THOMAS WILLIVER, in his official  
capacity as Chief of Police of the Chester Police  
Department, and JAMES B. O'CONNOR, in his  
official capacity as Chief of Police of the Lyndhurst  
Police Department,

Defendants.

Hon. Peter G. Sheridan, U.S.D.J.  
Hon. Lois H. Goodman, U.S.M.J.

Docket No. 3:18-cv-10507-PGS-LHG

**DECLARATION OF LUCY P.  
ALLEN**

I, Lucy P. Allen, am competent to state, and declare the following, based on my personal knowledge:

1. I am a citizen of the United States and a resident of New York.
2. I am over 21 years of age.

## **I. SCOPE OF ASSIGNMENT**

1. I have been asked by the Office of the Attorney General of New Jersey to address the following issues: (a) the number of rounds of ammunition fired by individuals using a gun in self-defense; and (b) weapons used in mass shootings.

## **II. QUALIFICATIONS AND REMUNERATION**

### **A. Qualifications**

2. I am a Managing Director of NERA Economic Consulting (“NERA”), a member of NERA’s Securities and Finance Practice and Chair of NERA’s Product Liability and Mass Torts Practice. NERA provides practical economic advice related to highly complex business and legal issues arising from competition, regulation, public policy, strategy, finance, and litigation. NERA was established in 1961 and now employs approximately 500 people in more than 20 offices worldwide.

3. In my over 20 years at NERA, I have been engaged as an economic consultant or expert witness in numerous projects involving economic and statistical analysis. I have been qualified as an expert and testified in court on various economic and statistical issues relating to the flow of guns into the criminal market. I have testified at trials in Federal District Court, before the New York City Council Public Safety Committee, the American Arbitration Association and the Judicial Arbitration Mediation Service, as well as in depositions.

4. I have an A.B. from Stanford University, an M.B.A. from Yale University, and M.A. and M. Phil. degrees in Economics, also from Yale University. Prior to joining NERA, I was an Economist for both President George H. W. Bush’s and President Bill Clinton’s Council of Economic Advisers. My resume with recent publications and testifying experience is included as Appendix A.

## **B. Remuneration**

5. NERA is being compensated for time spent by me and my team at standard billing rates and for out-of-pocket expenses at cost. NERA currently bills for my time at \$900 per hour. NERA's fees are not in any way contingent upon the outcome of this matter.

## **III. MATERIALS CONSIDERED**

6. In preparing this report, I considered the following materials:

- a) Complaint for Declaratory and Injunctive Relief, filed June 13, 2018 ("Complaint");
- b) Plaintiffs' Brief in Support of their Motion for Preliminary Injunction, filed June 21, 2018;
- c) Declaration of Gary Kleck in Support of Plaintiffs' Motion for a Preliminary Injunction, filed June 21, 2018;
- d) Declaration of James Curcuruto in Support of Plaintiffs' Motion for a Preliminary Injunction, filed June 21, 2018;
- e) Declaration of Scott L. Bach in Support of Plaintiffs' Motion for a Preliminary Injunction, filed June 21, 2018;
- f) Declaration of Alexander Dembowski in Support of Plaintiffs' Motion for a Preliminary Injunction, filed June 21, 2018;
- g) Declaration of Blake Ellman in Support of Plaintiffs' Motion for a Preliminary Injunction, filed June 21, 2018;
- h) Declaration of Daniel L. Schmutter in Support of Plaintiffs' Motion for a Preliminary Injunction, filed June 21, 2018;
- i) Order Granting Preliminary Injunction, dated June 29, 2017, and Expert Witness Rebuttal of Dr. Gary Kleck, dated November 3, 2017, in *Virginia Duncan, et al., v. Xavier Becerra, et al.*;

- j) NRA Institute for Legislative Action, Armed Citizen Stories, <https://www.nraila.org/gun-laws/armed-citizen.aspx>, last accessed May 28, 2017, and supporting news stories for the incidents obtained through Factiva and Google searches;
- k) Claude Werner, “The Armed Citizen – A Five Year Analysis,” <http://gunssaveslives.net/self-defense/analysis-of-five-years-of-armed-encounters-with-data-tables>, accessed January 10, 2014;
- l) News stories on incidents of self-defense with a firearm in the home from Factiva between January 2011 and May 2017;
- m) Freedman, David A., and David H. Kaye, “Reference Guide on Statistics,” *Reference Manual on Scientific Evidence* (Washington, D.C.: The National Academies Press, 3rd ed., 2011), pp. 211-302;
- n) Fisher, Franklin M., “Multiple Regression in Legal Proceedings,” 80 *Columbia Law Review* 702 (1980);
- o) Mother Jones: “US Mass Shootings, 1982-2017: Data From Mother Jones’ Investigation,” updated October 2, 2017, <http://www.motherjones.com/politics/2012/12/mass-shootings-mother-jones-full-data>, accessed October 2, 2017; “A Guide to Mass Shootings in America,” updated October 2, 2017, <http://www.motherjones.com/politics/2012/07/mass-shootings-map>, accessed October 2, 2017; “What Exactly is a Mass Shooting,” *Mother Jones*, August 14, 2012, <http://www.motherjones.com/mojo/2012/08/what-is-a-mass-shooting>. Additional details for the mass shootings obtained through Factiva and Google searches;
- p) Citizens Crime Commission of New York City: “Mayhem Multiplied: Mass Shooters and Assault Weapons,” 2016, <http://www.nycrimecommission.org/pdfs/CCC-MayhemMultiplied-June2016.pdf>; “Mass Shooting Incidents in America (1984-2012),” <http://www.nycrimecommission.org/mass-shooting-incidents-america.php>, accessed June 1, 2017. Additional details for the mass shootings obtained through Factiva and Google searches; and

- q) Kleck, Gary, “Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages,” 17 *Justice Research and Policy* 28 (2016).

## IV. FINDINGS

### A. Number of rounds fired by individuals in self-defense

7. Plaintiffs claim the banned “large-capacity magazines” (which are magazines capable of holding more than ten rounds) are commonly used in the home for self-defense.<sup>1</sup>

8. Analysis of data from the NRA Institute for Legislative Action, as well as my own study of news reports on incidents of self-defense with a firearm, indicates that it is rare for a person, when using a firearm in self-defense, to fire more than ten rounds. The NRA maintains a database of “Armed Citizen” stories describing private citizens who have successfully defended themselves, or others, using a firearm (“NRA Armed Citizen database”). According to the NRA, the “Armed Citizen” stories “highlight accounts of law-abiding gun owners in America using their Second Amendment rights to defend self, home and family.”<sup>2</sup> Although the methodology used to compile the NRA Armed Citizen database of stories is not explicitly detailed by the NRA, and the database itself is not readily replicable, the NRA Armed Citizen database was the largest collection of accounts of citizen self-defense compiled by others that I was able to find. In light of the positions taken by the entity compiling the data, I would expect that any selection bias would be in favor of stories that put use of guns in self-defense in the best possible light. In addition to analyzing incidents in the NRA Armed Citizen database (2011 through May 2017), I performed my own systematic, scientific study of news reports on incidents of self-defense with a firearm in the home, covering the same time period.

9. My team and I performed an analysis of incidents in the NRA Armed Citizen database that occurred between January 2011 and May 2017. For each incident, the city/county, state, venue (whether the incident occurred on the street, in the home, or elsewhere) and the

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<sup>1</sup> Complaint, ¶¶37,42,44,51.

<sup>2</sup> NRA Institute for Legislative Action, Armed Citizens, <https://www.nraila.org/gun-laws/armed-citizen/>, last accessed May 28, 2017.

number of shots fired were tabulated.<sup>3</sup> The information was gathered for each incident from both the NRA synopsis and, where available, an additional news story. An additional news story was found for over 95% of the incidents in the NRA Armed Citizen database.

10. According to this analysis of incidents in the NRA Armed Citizen database, defenders fired 2.2 shots on average. Out of 736 incidents, there were two incidents (0.3% of all incidents), in which the defender was reported to have fired more than 10 bullets. In 18.2% of incidents, the defender did not fire any shots, and simply threatened the offender with a gun. For incidents occurring in the home (56% of total), defenders fired an average of 2.1 shots, and fired no shots in 16.1% of incidents.<sup>4</sup> The table below summarizes these findings:

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<sup>3</sup> The following incidents were excluded from the analysis: (1) duplicate incidents, (2) wild animal attacks, and (3) one incident where the supposed victim later pleaded guilty to covering up a murder. When the exact number of shots fired was not specified, we used the average for the most relevant incidents with known number of shots. For example, if the story stated that “shots were fired” this would indicate that at least two shots were fired and thus we used the average number of shots fired in all incidents in which two or more shots were fired and the number of shots was specified.

<sup>4</sup> A separate study of incidents in the NRA Armed Citizen database for an earlier period (the five year period from 1997 through 2001) found similar results. Specifically, this study found that, on average, 2.2 shots were fired by defenders and that in 28% of incidents of armed citizens defending themselves the individuals fired no shots at all. See, Claude Werner, “The Armed Citizen – A Five Year Analysis,” <http://gunssaveslives.net/self-defense/analysis-of-five-years-of-armed-encounters-with-data-tables>, accessed January 10, 2014.

**Number of Shots Fired in Self-Defense  
Based on NRA Armed Citizen Incidents in the United States  
January 2011 - May 2017**

	<u>Shots Fired by Individual in Self-Defense</u>	
	<u>Overall</u>	<u>Incidents in Home</u>
Average Number of Shots Fired	2.2	2.1
Number of Incidents with No Shots Fired	134	66
Percent of Incidents with No Shots Fired	18.2%	16.1%
Number of Incidents with >10 Shots Fired	2	2
Percent of Incidents with >10 Shots Fired	0.3%	0.5%

**Notes and Sources:**

Data from NRA Armed Citizen database covering 736 incidents (of which 411 were in the home) from January 2011 through May 2017. Excludes duplicate incidents, wild animal attacks and one incident where the supposed victim later pleaded guilty to covering up a murder.

11. We also performed the same analysis of the NRA Armed Citizen database limited to incidents that occurred in the state of New Jersey. According to this analysis, defenders in New Jersey fired 2.2 shots on average. Out of 6 incidents, there were no incidents in which the defender was reported to have fired more than 10 bullets.

12. In addition to our analysis of incidents in the NRA Armed Citizen database, we performed a systematic, scientific study of news reports on incidents of self-defense with a firearm in the home, covering the same time period used in our analysis of the NRA Armed Citizen database.

13. To identify relevant news stories to include in our analysis, we performed a comprehensive search of published news stories using Factiva, an online news reporting service and archive owned by Dow Jones, Inc. that aggregates news content from nearly 33,000 sources. The search covered the same period used in our analysis of incidents in the NRA Armed Citizen database (January 2011 to May 2017). The search identified all stories that contained the following keywords in the headline or lead paragraph: one or more words from “gun,” “shot,”

“shoot,” “fire,” or “arm” (including variations on these keywords, such as “shooting” or “armed”), plus one or more words from “broke in,” “break in,” “broken into,” “breaking into,” “burglar,” “intruder,” or “invader” (including variations on these keywords) and one or more words from “home,” “apartment,” or “property” (including variations on these keywords).<sup>5</sup> The region for the Factiva search was set to “United States.” The search returned approximately 35,000 stories for the period January 2011 to May 2017.<sup>6</sup>

14. Using a random number generator, a random sample of 200 stories was selected for each calendar year, yielding 1,400 stories in total.<sup>7</sup> These 1,400 stories were reviewed to identify those stories that were relevant to the analysis, *i.e.*, incidents of self-defense with a firearm in or near the home. This methodology yielded a random selection of 200 news stories describing incidents of self-defense with a firearm in the home out of a population of approximately 4,800 relevant stories. Thus, we found that out of the over 70 million news stories aggregated by Factiva between January 2011 and May 2017, approximately 4,800 news stories were on incidents of self-defense with a firearm in the home. We analyzed a random selection of 200 of these stories.

15. For each news story, the city/county, state and number of shots fired were tabulated. When tabulating the number of shots fired, we used the same methodology as we used to analyze stories in the NRA Armed Citizen database.<sup>8</sup> We then identified other stories describing the same incident on Factiva based on the date, location and other identifying information, and recorded the number of times that each incident was covered by Factiva news stories.

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<sup>5</sup> The precise search string used was: (gun\* or shot\* or shoot\* or fire\* or arm\*) and (“broke in” or “break in” or “broken into” or “breaking into” or burglar\* or intrud\* or inva\*) and (home\* or “apartment” or “property”). An asterisk denotes a wildcard, meaning the search includes words which have any letters in place of the asterisk. For example, a search for shoot\* would return results including “shoots,” “shooter” and “shooting.” The search excluded duplicate stories classified as “similar” on Factiva.

<sup>6</sup> We compared a sample of stories in the NRA Armed Citizen database to the Factiva search and found that the Factiva search contained all of the NRA stories with the exception of those published by sources not tracked by Factiva.

<sup>7</sup> The random numbers were generated by sampling with replacement.

<sup>8</sup> When the exact number of shots fired was not specified, we used the average for the most relevant incidents with known number of shots. For example, if the story stated that “shots were fired” this would indicate that at least two shots were fired and thus we used the average number of shots fired in all incidents in which two or more shots were fired and the number of shots was specified.



16. According to our study of a random selection from approximately 4,800 relevant stories on Factiva describing incidents of self-defense with a firearm in the home, the average number of shots fired per story was 2.61. This is not a measure of the average shots fired *per incident*, however, because the number of stories covering an incident varies, and the variation is not independent of the number of shots fired. We found that there was a statistically significant relationship between the number of shots fired in an incident and the number of news stories covering an incident.<sup>9</sup> We found that on average the more shots fired in a defensive gun use incident, the greater the number of stories covering an incident. For example, as shown in the table below, we found that incidents in Factiva news stories with zero shots fired were covered on average by 1.8 news stories, while incidents with six or more shots fired were covered on average by 10.4 different news stories.

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<sup>9</sup> Based on a linear regression of the number of news stories as a function of the number of shots fired, the results were statistically significant at the 1% level (more stringent than the 5% level commonly used by academics and accepted by courts. See, for example, Freedman, David A., and David H. Kaye, "Reference Guide on Statistics," *Reference Manual on Scientific Evidence* (Washington, D.C.: The National Academies Press, 3rd ed., 2011), pp. 211-302, and Fisher, Franklin M., "Multiple Regression in Legal Proceedings," 80 *Columbia Law Review* 702 (1980).)

**Average Number of News Stories by Number of Shots Fired  
In Factiva Stories on Incidents of Self-Defense with a Firearm  
January 2011 - May 2017**

<b>Number of Shots Fired By Defender</b>	<b>Average Number of News Stories</b>
0	1.8
1 to 2	2.8
3 to 5	3.8
6 or more	10.4

**Notes and Sources:**

Based on news stories describing defensive gun use in a random selection of Factiva stories between 2011 and May 2017 using the search string: (gun\* or shot\* or shoot\* or fire\* or arm\*) and ("broke in" or "break in" or "broken into" or "breaking into" or burglar\* or intrud\* or inva\*) and (home\* or "apartment" or "property"), with region set to "United States" and excluding duplicate stories classified as "similar" on Factiva. Methodology for tabulation of shots fired as per footnote 8.

17. After adjusting for this disparity in news coverage, we find that the average number of shots fired per incident covered is 2.34.<sup>10</sup> Note that this adjustment does not take into account the fact that some defensive gun use incidents may not be picked up by *any* news story. Given the observed relationship that there are more news stories when there are more shots fired, one would expect that the incidents that are not written about would on average have fewer shots than those with news stories. Therefore, the expectation is that these results, even after the

<sup>10</sup> The adjustment reflects the probability that a news story on a particular incident would be selected at random from the total population of news stories on incidents of self-defense with a firearm in the home. The formula used for the adjustment is:

$$\frac{\sum_{i=1}^n \left( \text{Shots Fired}_i \times \frac{R_i}{C_i} \right)}{\sum_{i=1}^n \left( \frac{R_i}{C_i} \right)}$$

where:

$n$  = random selection of news stories on incidents of self-defense with a firearm in the home

$R_i$  = number of search results on Factiva in the calendar year of incident  $i$

$C_i$  = number of news stories covering incident  $i$

adjustment, are biased upward (*i.e.*, estimating too high an average number of shots and underestimating the percent of incidents in which no shots were fired).

18. As shown in the table below, according to the study of Factiva news stories, in 11.6% of incidents the defender did not fire any shots, and simply threatened the offender with a gun. In 97.3% of incidents the defender fired 5 or fewer shots. There were no incidents where the defender was reported to have fired more than 10 bullets.

**Number of Shots Fired in Self-Defense in the Home  
Based on Random Selection of News Stories in Factiva  
January 2011 - May 2017**

Estimated population of news reports in Factiva on self-defense with a firearm in the home	4,841
Random selection of news reports	200
Average Number of Shots Fired	2.34
Median Number of Shots Fired	2.03
Number of Incidents with No Shots Fired	23
Percent of Incidents with No Shots Fired	11.6%
Number of Incidents with $\leq 5$ Shots Fired	195
Percent of Incidents with $\leq 5$ Shots Fired	97.3%
Number of Incidents with $> 10$ Shots Fired	0
Percent of Incidents with $> 10$ Shots Fired	0.0%

**Notes and Sources:**

Based on news stories describing defensive gun use in a random selection of Factiva stories between 2011 and May 2017 using the search string: (gun\* or shot\* or shoot\* or fire\* or arm\*) and ("broke in" or "break in" or "broken into" or "breaking into" or burglar\* or intrud\* or inva\*) and (home\* or "apartment" or "property"), with region set to "United States" and excluding duplicate stories classified as "similar" on Factiva. Methodology for tabulation of shots fired as per footnote 8. Number of incidents probability-weighted as per footnote 10.

19. In sum, an analysis of incidents in the NRA Armed Citizen database, as well as our own study of a random sample from approximately 4,800 news stories describing incidents

of self-defense with a firearm, indicates that it is rare for a person, when using a firearm in self-defense, to fire more than ten rounds.

## **B. Mass shootings**

### **1. Use of large-capacity magazines in mass shootings**

20. We analyzed two sources detailing historical mass shootings: 1) Mother Jones, “US Mass Shootings, 1982-2017: Data From Mother Jones’ Investigation,”<sup>11</sup> and 2) the Citizens Crime Commission of New York City, “Mayhem Multiplied: Mass Shooters and Assault Weapons”<sup>12</sup> and “Mass Shooting Incidents in America (1984-2012).”<sup>13</sup>

21. The definition of a mass shooting and the period covered differed somewhat for each of the sources. The Mother Jones data that we analyzed covers 91 mass shootings from 1982 to October 2017. Mother Jones includes mass shootings in which a shooter killed four or more people in one incident in a public place and excludes crimes involving armed robbery or gang violence.<sup>14</sup> Starting in January 2013, Mother Jones changed its definition of a mass shooting to include instances when a shooter killed three or more people, consistent with a change in the federal definition of a mass shooting.<sup>15</sup> The Citizens Crime Commission data that we analyzed covers 73 mass shootings from 1984 to June 2016. Citizens Crime Commission

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<sup>11</sup> “US Mass Shootings, 1982-2017: Data From Mother Jones’ Investigation,” *Mother Jones*, updated October 2, 2017, <http://www.motherjones.com/politics/2012/12/mass-shootings-mother-jones-full-data>, accessed October 2, 2017. Note that the October 1, 2017 Las Vegas Strip mass shooting occurred a few days before this analysis was performed, and thus, information and statistics available on this mass shooting at the time were preliminary. Mother Jones has since updated the data on injuries and fatalities in this mass shooting.

<sup>12</sup> “Mayhem Multiplied: Mass Shooters and Assault Weapons,” *Citizens Crime Commission of New York City*, 2016.

<sup>13</sup> “Mass Shooting Incidents in America (1984-2012),” *Citizens Crime Commission of New York City*, <http://www.nycrimecommission.org/mass-shooting-incidents-america.php>, accessed June 1, 2017.

<sup>14</sup> “A Guide to Mass Shootings in America,” *Mother Jones*, updated October 2, 2017, <http://www.motherjones.com/politics/2012/07/mass-shootings-map>. See also, “What Exactly is a Mass Shooting,” *Mother Jones*, August 14, 2012. <http://www.motherjones.com/mojo/2012/08/what-is-a-mass-shooting>.

<sup>15</sup> “A Guide to Mass Shootings in America,” *Mother Jones*, updated October 2, 2017, <http://www.motherjones.com/politics/2012/07/mass-shootings-map>. Note this analysis of the Mother Jones data may not match other analyses because Mother Jones periodically updates its historical data.

The Mother Jones data includes three incidents involving two shooters (Columbine High School, San Bernardino and Westside Middle School).

includes mass shootings in which a shooter killed four or more people in a public place and was unrelated to another crime (such as robbery or domestic violence).<sup>16</sup> We combined the data from both sources and searched news stories on each mass shooting to obtain data on shots fired where available. See attached Appendix B for a summary of the combined data.<sup>17</sup>

22. Based on the combined data we found that large-capacity magazines (those with a capacity to hold more than 10 rounds of ammunition) are often used in mass shootings. Magazine capacity is known in 83 out of the 96 mass shootings (86%) considered in this analysis. We found that large-capacity magazines were used in the majority of mass shootings since 1982 regardless of how mass shootings with unknown magazine capacity are treated. In particular, out of 83 mass shootings with known magazine capacity, 54 involved large-capacity magazines or 65% of mass shootings with known magazine capacity. Even assuming the mass shootings with unknown magazine capacity *all* did not involve large-capacity magazines, the majority of mass shootings involved large capacity magazines (*i.e.*, 54 out of 96 mass shootings or 56%).

23. The combined data on mass shootings indicates that it is common for offenders to fire more than ten rounds when using a gun with a large-capacity magazine in mass shootings. In

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<sup>16</sup> Note that the Citizens Crime Commission data are obtained from two sources. The first source covers 72 mass shootings from 1984 to 2016, in which a shooter killed four or more people in a public place and was unrelated to another crime (such as robbery or domestic violence). See, “Mayhem Multiplied: Mass Shooters and Assault Weapons,” *Citizens Crime Commission of New York City*, 2016.

The second source covers 33 mass shootings from 1984 to 2012, in which a shooter killed four or more people and the gun used by the shooter had a magazine capacity greater than ten. All but one of the mass shooting incidents in the second source are covered by the first, but the combination of the two sources provides additional detail, such as the number of shots fired. See, “Mass Shooting Incidents in America (1984-2012),” *Citizens Crime Commission of New York City*, <http://www.nycrimecommission.org/mass-shooting-incidents-america.php>, accessed June 1, 2017.

<sup>17</sup> Note that questions have been raised about potential bias in the data on mass shootings from Mother Jones. See, Order Granting Preliminary Injunction, dated June 29, 2017, and Expert Witness Rebuttal of Dr. Gary Kleck, dated November 3, 2017, in *Virginia Duncan, et al., v. Xavier Becerra, et al.* In particular, Plaintiffs’ expert Gary Kleck claimed that the Mother Jones data is biased because it excludes mass shootings that did not involve large capacity magazines and only covers incidents where magazine capacity could be determined. Dr. Kleck’s criticisms are mistaken, however, and he provides no evidence of any bias. Dr. Kleck did not identify a single incident that was excluded from the Mother Jones data that fit their definition of a mass shooting. Furthermore, contrary to Dr. Kleck’s claim, the Mother Jones data does include incidents in which magazine capacity was unknown, as shown in Appendix B of this report.

particular, in mass shootings that involved use of large-capacity magazine guns, the average number of shots fired was 99.<sup>18</sup>

## **2. Casualties in mass shootings with large-capacity magazine guns compared with other mass shootings**

24. Based on our analysis of the combined mass shootings data in the past 35 years, casualties were higher in the mass shootings that involved large-capacity magazine guns than in other mass shootings. In particular, we found an average number of fatalities or injuries of 31 per mass shooting with a large-capacity magazine versus 9 for those without.<sup>19</sup>

## **3. Percent of mass shooters' guns legally obtained**

25. The combined data on mass shootings indicates that the majority of guns used in mass shootings were obtained legally.<sup>20</sup> According to the data, shooters in at least 71% of mass shootings in the past 35 years obtained their guns legally (at least 68 of the 96 mass shootings) and at least 76% of the guns used in these 96 mass shootings were obtained legally (at least 170 of the 224 guns).<sup>21</sup>

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<sup>18</sup> There were 37 mass shootings in which the magazine used was known to be a large capacity magazine and the number of shots fired were known.

<sup>19</sup> An analysis of the mass shootings detailed in an article by Plaintiffs' expert Gary Kleck yielded similar results (21 average fatalities or injuries in mass shootings involving large-capacity magazines versus 8 for those without). The article covered 88 mass shooting incidents between 1994 and 2013. See, Kleck, Gary, "Large-Capacity Magazines and the Casualty Counts in Mass Shootings: The Plausibility of Linkages," 17 *Justice Research and Policy* 28 (2016).

<sup>20</sup> The determination of whether guns were obtained legally is based on Mother Jones reporting.

<sup>21</sup> Mother Jones did not indicate whether the guns were obtained legally for 10% of mass shootings (9 out of the 91 mass shootings covered by Mother Jones).

I declare under penalty of perjury under the laws of the United States of America that the foregoing facts are true and correct. Executed on this 5<sup>th</sup> day of July, 2018 in New York, New York.

A handwritten signature in blue ink, appearing to read "Lucy P. Allen", is written over a horizontal line.

Lucy P. Allen



Lucy P. Allen  
Managing Director

NERA Economic Consulting  
1166 Avenue of the Americas  
New York, New York 10036  
Tel: +1 212 345 5913 Fax: +1 212 345 4650  
lucy.allen@nera.com  
www.nera.com

## Appendix A

### MANAGING DIRECTOR

#### Education

##### **YALE UNIVERSITY**

M.Phil., Economics, 1990

M.A., Economics, 1989

M.B.A., 1986

##### **STANFORD UNIVERSITY**

A.B., Human Biology, 1981

#### Professional Experience

- |                        |  |
|------------------------|--|
| 1994-Present           | <p><b>National Economic Research Associates, Inc.</b><br/><u>Managing Director</u>. Responsible for economic analysis in the areas of securities, finance and environmental and tort economics.<br/><u>Senior Vice President (2003-2016)</u>.<br/><u>Vice President (1999-2003)</u>.<br/><u>Senior Consultant (1994-1999)</u>.</p>   |
| 1992-1993              | <p><b>Council of Economic Advisers, Executive Office of the President</b><br/><u>Staff Economist</u>. Provided economic analysis on regulatory and health care issues to Council Members and interagency groups. Shared responsibility for regulation and health care chapters of the <i>Economic Report of the President, 1993</i>. Working Group member of the President's National Health Care Reform Task Force.</p>   |
| 1986-1988<br>1983-1984 | <p><b>Ayers, Whitmore &amp; Company (General Management Consultants)</b><br/><u>Senior Associate</u>. Formulated marketing, organization, and overall business strategies including:<br/>Plan to improve profitability of chemical process equipment manufacturer.<br/>Merger analysis and integration plan of two equipment manufacturers.<br/>Evaluation of Korean competition to a U.S. manufacturer.<br/>Diagnostic survey for auto parts manufacturer on growth obstacles.<br/>Marketing plan to increase international market share for major accounting firm.</p> |



Summer 1985      **WNET/Channel Thirteen, Strategic Planning Department**  
Associate. Assisted in development of company's first long-term strategic plan. Analyzed relationship between programming and viewer support.

1981-1983      **Arthur Andersen & Company**  
Consultant. Designed, programmed and installed management information systems. Participated in redesign/conversion of New York State's accounting system. Developed municipal bond fund management system, successfully marketed to brokers. Participated in President's Private Sector Survey on Cost Control (Grace Commission). Designed customized tracking and accounting system for shipping company.

Teaching  
 1989- 1992      **Teaching Fellow, Yale University**  
 Honors Econometrics  
 Intermediate Microeconomics  
 Competitive Strategies  
 Probability and Game Theory  
 Marketing Strategy  
 Economic Analysis

## **Publications, Speeches and Conference Papers**

"Snapshot of Recent Trends in Asbestos Litigation: 2018 Update," (co-author), NERA Report, 2018.

"Trends and the Economic Effect of Asbestos Bans and Decline in Asbestos Consumption and Production Worldwide," (co-author), *International Journal of Environmental Research and Public Health*, 15(3), 531, 2018.

"Snapshot of Recent Trends in Asbestos Litigation: 2017 Update," (co-author), NERA Report, 2017.

"Asbestos: Economic Assessment of Bans and Declining Production and Consumption," World Health Organization, 2017.

"Snapshot of Recent Trends in Asbestos Litigation: 2016 Update," (co-author), NERA Report, 2016.

"Economic Dimension and Societal Costs and Benefits of Banning Asbestos," presented at the World Health Organization, Regional Office for Europe conference, Assessing the Economic Costs of the Health Impacts of Environmental and Occupational Factors: The Economic Dimension of Asbestos, Bonn, Germany, 2016.

"Snapshot of Recent Trends in Asbestos Litigation: 2015 Update," (co-author), NERA Report, 2015.

Lucy P. Allen

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Lucy P. Allen

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**Appendix B**  
**Combined Mass Shootings Data**  
**1982 – October 2017**

Case	Location	Date	Source	Large Cap. Mag.? <sup>a</sup>	Fatalities <sup>b</sup>	Injuries <sup>b</sup>	Total Fatalities & Injuries <sup>b</sup>	Shots Fired	Gun(s) Obtained Legally? <sup>c</sup>	Offenders' Number of Guns
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. Las Vegas Strip	Las Vegas, NV	10/1/2017	MJ	Yes	58 <sup>d</sup>	546 <sup>d</sup>	604 <sup>d</sup>	1,100 <sup>e</sup>	Yes	23
2. San Francisco UPS	San Francisco, CA	6/14/2017	MJ	Yes	3	2	5	-	No	2
3. Pennsylvania Supermarket	Tunkhannock, PA	6/7/2017	MJ	No	3	0	3	59 <sup>f</sup>	-	2
4. Fiamma Workplace	Orlando, FL	6/5/2017	MJ	-	5	0	5	-	-	1
5. Ohio Nursing Home	Kirkersville, OH	5/12/2017	MJ	-	3	0	3	-	-	2
6. Fresno Downtown	Fresno, CA	4/18/2017	MJ	No	3	0	3	16 <sup>g</sup>	-	1
7. Fort Lauderdale Airport	Fort Lauderdale, FL	1/6/2017	MJ	-	5	6	11	15 <sup>h</sup>	Yes	1
8. Cascade Mall	Burlington, WA	9/23/2016	MJ	-	5	0	5	-	-	1
9. Baton Rouge Police	Baton Rouge, LA	7/17/2016	MJ	Yes	3	3	6	43 <sup>i</sup>	-	3
10. Dallas Police	Dallas, TX	7/7/2016	MJ	Yes	5	11	16	-	Yes	3
11. Orlando Nightclub	Orlando, FL	6/12/2016	MJ/CC	Yes	49/50	53	102/103	110 <sup>j</sup>	Yes	2
12. Excel Industries	Hesston, KS	2/25/2016	MJ	Yes	3	14	17	-	Yes	2
13. Kalamazoo	Kalamazoo County, MI	2/20/2016	MJ	-	6	2	8	-	Yes	1
14. San Bernardino	San Bernardino, CA	12/2/2015	MJ/CC	Yes	14/16	21	35/37	150 <sup>k</sup>	Yes	4
15. Planned Parenthood Clinic	Colorado Springs, CO	11/27/2015	MJ	-	3	9	12	-	-	1
16. Colorado Springs	Colorado Springs, CO	10/31/2015	MJ	Yes	3	0	3	-	Yes	3
17. Umpqua Community College	Roseburg, OR	10/1/2015	MJ/CC	Yes	9/10	9	18/19	-	Yes	6
18. Chattanooga Military Center	Chattanooga, TN	7/16/2015	MJ/CC	Yes	5/6	2/3	7/9	-	Yes	3
19. Charleston Church	Charleston, SC	6/17/2015	MJ/CC	Yes	9	1	10	-	Yes	1
20. Trestle Trail Bridge	Menasha, WI	6/11/2015	MJ	-	3	1	4	-	Yes	2
21. Marysville High School	Marysville, WA	10/24/2014	MJ/CC	Yes	5	1	6	-	Stolen	1
22. Isla Vista	Santa Barbara, CA	5/23/2014	MJ	Yes	6	13	19	50 <sup>l</sup>	Yes	3
23. Fort Hood	Fort Hood, TX	4/3/2014	MJ	-	3	12	15	-	Yes	1
24. Alturas Tribal	Alturas, CA	2/20/2014	MJ	-	4	2	6	-	-	2
25. Washington Navy Yard	Washington, D.C.	9/16/2013	MJ/CC	No	12/13	8/7	20	-	Yes	2

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
26. Hialeah	Hialeah, FL	7/26/2013	MJ/CC	Yes	7	0	7	10 <sup>m</sup>	Yes	1
27. Santa Monica	Santa Monica, CA	6/7/2013	MJ/CC	Yes	6	3/4	9/10	70 <sup>n</sup>	Yes	2
28. Federal Way	Federal Way, WA	4/21/2013	MJ	-	5	0	5	-	Yes	2
29. Upstate New York	Herkimer County, NY	3/13/2013	MJ	-	5	2	7	-	Yes	1
30. Newtown School	Newtown, CT	12/14/2012	MJ/CC	Yes	28	2	30	154	Stolen	4/3
31. Accent Signage Systems	Minneapolis, MN	9/27/2012	MJ/CC	Yes	7	1/2	8/9	46	Yes	1
32. Sikh Temple	Oak Creek, WI	8/5/2012	MJ/CC	Yes	7	3	10	-	Yes	1
33. Aurora Movie Theater	Aurora, CO	7/20/2012	MJ/CC	Yes	12	70	82	80	Yes	4
34. Seattle Café	Seattle, WA	5/30/2012	MJ/CC	No	6	1	7	-	Yes	2
35. Oikos University	Oakland, CA	4/2/2012	MJ/CC	No	7	3	10	-	Yes	1
36. Su Jung Health Sauna	Norcross, GA	2/22/2012	MJ	-	5	0	5	-	Yes	1
37. Seal Beach	Seal Beach, CA	10/14/2011	MJ/CC	No	8	1	9	-	Yes	3
38. IHOP	Carson City, NV	9/6/2011	MJ/CC	Yes	5	7	12	-	Yes	3
39. Grand Rapids	Grand Rapids, MI	7/7/2011	CC	Yes	8	2	10	10	-	1
40. Tucson	Tucson, AZ	1/8/2011	MJ/CC	Yes	6	13	19	33	Yes	1
41. Hartford Beer Distributor	Manchester, CT	8/3/2010	MJ/CC	Yes	9	2	11	11	Yes	2
42. Yoyito Café	Hialeah, FL	6/6/2010	CC	No	5	3	8	9 <sup>o</sup>	-	-
43. Coffee Shop Police	Parkland, WA	11/29/2009	MJ/CC	No	4/5	1/0	5	-	Stolen	2
44. Fort Hood	Fort Hood, TX	11/5/2009	MJ/CC	Yes	13	30/32	43/45	214	Yes	1
45. Binghamton	Binghamton, NY	4/3/2009	MJ/CC	Yes	14	4	18	99	Yes	2
46. Carthage Nursing Home	Carthage, NC	3/29/2009	MJ/CC	No	8	3/2	11/10	-	Yes	2
47. Atlantis Plastics	Henderson, KY	6/25/2008	MJ/CC	No	6	1	7	-	Yes	1
48. Northern Illinois University	DeKalb, IL	2/14/2008	MJ/CC	Yes	5/6	21	26/27	54	Yes	4
49. Kirkwood City Council	Kirkwood, MO	2/7/2008	MJ/CC	No	6	2	8	-	Stolen	2
50. Westroads Mall	Omaha, NE	12/5/2007	MJ/CC	Yes	9	4/5	13/14	14	Stolen	1



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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
51. Crandon	Crandon, WI	10/7/2007	MJ/CC	Yes	6/7	1	7/8	30 <sup>p</sup>	Yes	1
52. Virginia Tech	Blacksburg, VA	4/16/2007	MJ/CC	Yes	32/33	23/17	55/50	176	Yes	2
53. Trolley Square	Salt Lake City, UT	2/12/2007	MJ/CC	No	6	4	10	-	No	2
54. Amish School	Lancaster County, PA	10/2/2006	MJ/CC	No	6	5	11	-	Yes	3
55. Capitol Hill	Seattle, WA	3/25/2006	MJ/CC	Yes	7	2	9	-	Yes	4
56. Goleta Postal	Goleta, CA	1/30/2006	MJ/CC	Yes	8	0	8	-	Yes	1
57. Red Lake	Red Lake, MN	3/21/2005	MJ/CC	No	10	5/6	15/16	-	Stolen	3
58. Living Church of God	Brookfield, WI	3/12/2005	MJ/CC	Yes	7/8	4	11/12	-	Yes	1
59. Damageplan Show	Columbus, OH	12/8/2004	MJ/CC	No	5	7/3	12/8	15 <sup>q</sup>	Yes	1
60. Hunting Camp	Meteor, WI	11/21/2004	CC	Yes	6	3	9	20	-	1
61. Windy City Warehouse	Chicago, IL	8/27/2003	CC	No	7	0	7	-	-	-
62. Lockheed Martin	Meridian, MS	7/8/2003	MJ/CC	Yes	7	8	15	-	Yes	5
63. Navistar	Melrose Park, IL	2/5/2001	MJ/CC	Yes	5	4	9	-	Yes	4
64. Wakefield	Wakefield, MA	12/26/2000	MJ/CC	Yes	7	0	7	37	Yes	3
65. Hotel	Tampa, FL	12/30/1999	MJ/CC	No	5	3	8	-	Yes	2
66. Xerox	Honolulu, HI	11/2/1999	MJ/CC	Yes	7	0	7	28	Yes	1
67. Wedgwood Baptist Church	Fort Worth, TX	9/15/1999	MJ/CC	Yes	8	7	15	30	Yes	2
68. Atlanta Day Trading	Atlanta, GA	7/29/1999	MJ	-	9	13	22	-	Yes	4
69. Columbine High School	Littleton, CO	4/20/1999	MJ/CC	Yes	13/15	24	37/39	188	No	4
70. Thurston High School	Springfield, OR	5/21/1998	MJ/CC	Yes	4	25	29	50	No	3
71. Westside Middle School	Jonesboro, AR	3/24/1998	MJ/CC	Yes	5	10	15	26	Stolen	9/10
72. Connecticut Lottery	Newington, CT	3/6/1998	MJ/CC	Yes	5	1/0	6/5	5	Yes	1
73. Caltrans Maintenance Yard	Orange, CA	12/18/1997	MJ/CC	Yes	5	2	7	144	Yes	1
74. R.E. Phelon Company	Aiken, SC	9/15/1997	MJ/CC	No	4	3	7	-	No	1
75. Fort Lauderdale	Fort Lauderdale, FL	2/9/1996	MJ/CC	No	6	1	7	14 <sup>r</sup>	Yes	2

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
76. Piper Technical Center	Los Angeles, CA	7/19/1995	CC	Yes	4	0	4	-	-	-
77. Walter Rossler Company	Corpus Christi, TX	4/3/1995	MJ/CC	No	6	0	6	-	Yes	2
78. Air Force Base	Fairchild Base, WA	6/20/1994	MJ/CC	Yes	5/6	23	28/29	50 <sup>s</sup>	Yes	1
79. Chuck E. Cheese	Aurora, CO	12/14/1993	MJ/CC	No	4	1	5	-	-	1
80. Long Island Railroad	Garden City, NY	12/7/1993	MJ/CC	Yes	6	19	25	30	Yes	1
81. Luigi's Restaurant	Fayetteville, NC	8/6/1993	MJ/CC	No	4	8	12	-	Yes	3
82. 101 California Street	San Francisco, CA	7/1/1993	MJ/CC	Yes	9	6	15	75	No	3
83. Watkins Glen	Watkins Glen, NY	10/15/1992	MJ/CC	No	5	0	5	-	Yes	1
84. Lindhurst High School	Olivehurst, CA	5/1/1992	MJ/CC	No	4	10	14	-	Yes	2
85. Royal Oak Postal	Royal Oak, MI	11/14/1991	MJ/CC	No	5	5/4	10/9	-	Yes	1
86. University of Iowa	Iowa City, IA	11/1/1991	MJ/CC	No	6	1	7	-	Yes	1
87. Luby's Cafeteria	Killeen, TX	10/16/1991	MJ/CC	Yes	24	20	44	100	Yes	2
88. GMAC	Jacksonville, FL	6/18/1990	MJ/CC	Yes	10	4	14	14	Yes	2
89. Standard Gravure Corporation	Louisville, KY	9/14/1989	MJ/CC	Yes	9	12	21	21	Yes	5
90. Stockton Schoolyard	Stockton, CA	1/17/1989	MJ/CC	Yes	6	29/30	35/36	106	Yes	2
91. ESL	Sunnyvale, CA	2/16/1988	MJ/CC	No	7	4	11	-	Yes	7
92. Shopping Centers	Palm Bay, FL	4/23/1987	MJ/CC	Yes	6	14/10	20/16	40 <sup>t</sup>	Yes	3
93. United States Postal Service	Edmond, OK	8/20/1986	MJ/CC	No	15	6	21	-	Yes	3
94. San Ysidro McDonald's	San Ysidro, CA	7/18/1984	MJ/CC	Yes	22	19	41	257	Yes	3
95. Dallas Nightclub	Dallas, TX	6/29/1984	MJ/CC	Yes	6	1	7	-	No	1
96. Welding Shop	Miami, FL	8/20/1982	MJ	No	8	3	11	-	Yes	1
Large Capacity Magazine Average					10.2	20.3	30.6	99.3		
Non-Large Capacity Magazine Average					6.3	2.9	9.2	22.6		

## Appendix B

### Combined Mass Shootings Data

#### 1982 – October 2017

Case	Location	Date	Source	Large Cap. Mag.? <sup>a</sup>	Fatalities <sup>b</sup>	Injuries <sup>b</sup>	Total Fatalities & Injuries <sup>b</sup>	Shots Fired	Gun(s) Obtained Legally? <sup>c</sup>	Offenders' Number of Guns
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

#### Notes and Sources:

Data from Mother Jones ("US Mass Shootings, 1982-2017: Data from Mother Jones' Investigation," accessed October 2, 2017) and the Citizens Crime Commission of New York City ("Mayhem Multiplied: Mass Shooters and Assault Weapons," 2016, and "Citizens Crime Commission of New York City, Mass Shooting Incidents in America (1984-2012)," accessed June 1, 2017).

MJ indicates Mother Jones data. CC indicates Citizens Crime Commission of New York City data. If sources differ on data, "/" is added between values. In these instances, values from MJ are listed first. Except where noted, all data on shots fired obtained from CC.

<sup>a</sup> Large capacity magazines are those with a capacity to hold more than 10 rounds of ammunition.

<sup>b</sup> Offender(s) included in counts of fatalities and injuries.

<sup>c</sup> The determination of whether guns were obtained legally is based on Mother Jones reporting.

<sup>d</sup> Based on Mother Jones data accessed July 5, 2018.

<sup>e</sup> Shots fired from: "Sheriff Says More than 1,100 Rounds Fired in Las Vegas," *Las Vegas Review Journal*, November 22, 2017

<sup>f</sup> Shots fired from: "Killer in Supermarket Shooting Posted Chilling Videos Online, Lauding Columbine Massacre," *Washington Post*, June 9, 2017.

<sup>g</sup> Shots fired from: "Hate Crime is Suspected After Gunman Kills 3 White Men in Downtown Fresno," *Los Angeles Times*, April 19, 2017.

<sup>h</sup> Shots fired from: "Fort Lauderdale Shooting Suspect Appears in Court, Ordered Held Without Bond," *Washington Post*, January 9, 2017.

<sup>i</sup> Shots fired from: "Baton Rouge Cop Killer Left Note, Fired At Least 43 Rounds," *CNN*, July 9, 2017.

<sup>j</sup> Shots fired from: "'We Thought It Was Part of the Music': How the Pulse Nightclub Massacre Unfolded in Orlando," *The Telegraph*, June 13, 2016.

<sup>k</sup> Shots fired from: "San Bernardino Suspects Left Trail of Clues, but No Clear Motive," *New York Times*, December 3, 2015.

<sup>l</sup> Shots fired from: "Sheriff: Elliot Rodger Fired 50-plus Times in Isle Vista Rampage," *Los Angeles Times*, June 4, 2014.

<sup>m</sup> Shots fired from: "Shooter Set \$10,000 on Fire in Hialeah Shooting Rampage," *NBC News*, July 28, 2013.

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<sup>o</sup> Shots fired from: "Hialeah Gunman's Rage Over Estranged Wife Leaved 5 Dead," *Sun-Sentinel*, June 7, 2010.

<sup>p</sup> Shots fired from: "Small Town Grieves for 6, and the Killer," *Los Angeles Times*, October 9, 2007.

<sup>q</sup> Shots fired from: "National Briefing | Midwest: Ohio: Shooter At Club May Have Reloaded," *New York Times*, January 15, 2005.

<sup>r</sup> Shots fired from: "5 Beach Workers in Florida are Slain by Ex-Colleague," *New York Times*, February 10, 1996.

<sup>s</sup> Shots fired from: "Man Bent On Revenge Kills 4, Hurts 23 -- Psychiatrist Is First Slain In Rampage At Fairchild Air Force Base," *The Seattle Times*, June 21, 1994.

<sup>t</sup> Shots fired from: "6 Dead in Florida Sniper Siege; Police Seize Suspect in Massacre," *Chicago Tribune*, April 25, 1987.